OPTIMUM
MASCHINEN - GERMANY

# Betriebsanleitung

Version 1.1.1

## Teilscheiben

## IT 150

DE

# 1 Einsatzbereich

Die Teilscheiben finden Verwendung an Teilapparaten zum indirekten Teilen.

# 2 Lieferumfang IT 150

- 3 Stck. Teilscheiben
- Sektorarm
- Winkelschere mit Federblech

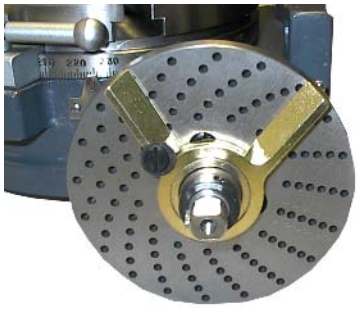
# 3 Montage

Montage der Teilscheibe an den Teilapparat.

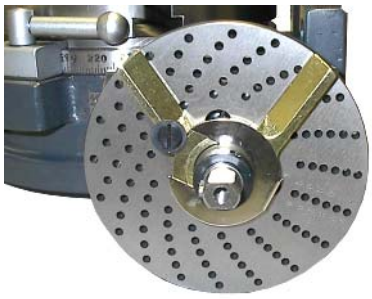
➜ Demontieren Sie das Handrad.

➜ Stecken Sie die Teilscheibe auf die Welle.

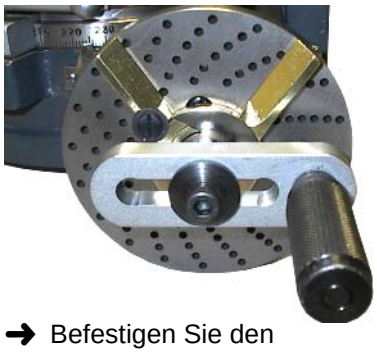
➜ Befestigen Sie die Teilscheibe mit den Schrauben.



➜ Stecken Sie die Winkelschere auf die Welle.



➜ Befestigen Sie die Winkelschere mit dem Federblech.



➜ Befestigen Sie den Sektorarm.

Abb.3-1: Montage Teilscheibe

# 4 Teilscheibentypen IT 150

| Teilscheibe | Teilkreis [ T ] , Anzahl der Bohrungen auf dem Teilkreis |
|---|---|
| **A** | 15 , 16 , 17 , 18 , 19 , 20 |
| **B** | 21 , 23 , 27 , 29 , 31 , 33 |
| **C** | 37 , 39 , 41, 43 , 47 , 49 |

# 5 Lochkreisermittlung

Übersetzungsverhältnis [ i ]

Anzahl der Teilungen [ T ]

Anzahl der Umdrehungen,
dies kann ein Bruch, eine gemischte Zahl oder eine ganze Zahl sein. [ $n_k$ ]

Winkelgrad [ $\alpha$ ]

## 5.1 Beispiele Lochkreisermittlung

**Beispiel 1:**

i = 90

T = 45

$$n_k = \frac{90}{45} = 2$$

Für 45 Teilungen auf dem Umfang des Werkstücks muss die Teilkurbel für jeden Teilabschnitt um 2 volle Umdrehungen weitergedreht werden.

**Beispiel 2:**

i = 90

$\alpha$ = 23° Winkelgrad

$$n_k = \frac{\alpha \times i}{360°} = \frac{23° \text{x} 90}{360°} = 5,75 = 5\frac{3}{4} = 5\frac{15}{20}$$

Für Teilungen auf dem Umfang des Werkstücks mit jeweils 23° Winkelgrad muss die Teilkurbel für jeden Teilabschnitt um 5 volle Umdrehungen und 15 Lochabstände auf der Teilscheibe A mit 20 Bohrungen auf dem Teilkreis weitergedreht werden.

**Beispiel 3:**

i = 90

T = 128

$$n_k = \frac{i}{T} = \frac{90}{130} = \frac{9}{13} = \frac{18}{26} = \frac{27}{39}$$

Für 130 Teilungen auf dem Umfang des Werkstücks muss die Teilkurbel für jeden Teilabschnitt um 27 Löcher auf der Teilkreisscheibe mit 39 Bohrungen versetzt werden.

**INFORMATION**

Nachfolgend eine Tabelle, mit der mögliche Teilungen für jede Teilkreisscheibe dargestellt sind.

Verwenden Sie für Teilungen größer 280 gegebenenfalls einen Taschenrechner. Wandeln Sie das Dezimalergebnis des Taschenrechners in einen Bruch um.

# 6 Änderungsinformationen Betriebsanleitung

| Kapitel | Kurzinformation | neue Versionsnummer |
|---|---|---|
| alle | Layout | 1.1.1 |

# 7 Lochkreistabelle IT 150

**INFORMATION**

Teilungen die nicht in den nachfolgenden Tabellen aufgeführt sind, sind nur möglich mit Teilapparaten die eine Ausgleichsteilung als Zusatzeinrichtung installiert haben.

Gültig für Übersetzungsverhältnis 90:1

| Teilung | Umdrehungen | Lochkreis | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 27 | 29 | 31 | 33 | 37 | 39 | 41 | 43 | 47 | 49 |
| 1 | 90 | | | | | | | | | | | | | | | | | | | |
| 2 | 45 | | | | | | | | | | | | | | | | | | | |
| 3 | 30 | | | | | | | | | | | | | | | | | | | |
| 4 | 22 | | 8 | | 9 | | 10 | | 11 | | | | | | | | | | | |
| 5 | 18 | | | | | | | | | | | | | | | | | | | |
| 6 | 15 | | | | | | | | | | | | | | | | | | | |
| 7 | 12 | | | | | | | 18 | | | | | | | | | | | | 42 |
| 8 | 11 | | 4 | | | | 5 | | | | | | | | | | | | | |
| 9 | 10 | | | | | | | | | | | | | | | | | | | |
| 10 | 9 | | | | | | | | | | | | | | | | | | | |
| 11 | 8 | | | | | | | | 4 | | | | | 6 | | | | | | |
| 12 | 7 | | 8 | | 9 | | 10 | | 11 | | | | | | | | | | | |
| 13 | 6 | | | | | | | | | | | | | | | 36 | | | | |
| 14 | 6 | | | | | | | 9 | | | | | | | | | | | | 21 |
| 15 | 6 | | | | | | | | | | | | | | | | | | | |
| 16 | 5 | | 10 | | | | | | | | | | | | | | | | | |
| 17 | 5 | | | 5 | | | | | | | | | | | | | | | | |
| 18 | 5 | | | | | | | | | | | | | | | | | | | |
| 19 | 4 | | | | | 14 | | | | | | | | | | | | | | |
| 20 | 4 | | 8 | | 9 | | 10 | | 11 | | | | | | | | | | | |
| 21 | 4 | | | | | | | 6 | | | | | | | | | | | | 14 |
| 22 | 4 | | | | | | | | 2 | | | | | 3 | | | | | | |
| 23 | 3 | | | | | | | | | 21 | | | | | | | | | | |
| 24 | 3 | | 12 | | | | 15 | | | | | | | | | | | | | |
| 25 | 3 | 9 | | | | | 12 | | | | | | | | | | | | | |
| 26 | 3 | | | | | | | | | | | | | | | 18 | | | | |
| 27 | 3 | 5 | | | 6 | | | 7 | | | 9 | | | 11 | | 13 | | | | |
| 28 | 3 | | | | | | | | | | | | | | | | | | | |
| 29 | 3 | | | | | | | | | | | 3 | | | | | | | | |
| 31 | 2 | | | | | | | | | | | | 28 | | | | | | | |
| 32 | 2 | | 13 | | | | | | | | | | | | | | | | | |
| 33 | 2 | | | | | | | | 16 | | | | | 24 | | | | | | |
| 34 | 2 | | | 11 | | | | | | | | | | | | | | | | |
| 35 | 2 | | | | | | | 12 | | | | | | | | | | | | 28 |

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| Teilung | Umdrehungen | Lochkreis | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 27 | 29 | 31 | 33 | 37 | 39 | 41 | 43 | 47 | 49 |
| 36 | 2 | | 8 | | 9 | | 10 | | 11 | | | | | | | | | | | |
| 37 | 2 | | | | | | | | | | | | | | 16 | | | | | |
| 38 | 2 | | | | | 7 | | | | | | | | | | | | | | |
| 39 | 2 | | | | | | | | | | | | | | | 12 | | | | |
| 40 | 2 | | 4 | | | | 5 | | | | | | | | | | | | | |
| 41 | 2 | | | | | | | | | | | | | | | | 8 | | | |
| 42 | 2 | | | | | | | 3 | | | | | | | | | | | | 7 |
| 43 | 2 | | | | | | | | | | | | | | | | | 4 | | |
| 44 | 2 | | | | | | | | 1 | | | | | | | | | | | |
| 45 | 2 | | | | | | | | | | | | | | | | | | | |
| 46 | 1 | | | | | | | | | 22 | | | | | | | | | | |
| 47 | 1 | | | | | | | | | | | | | | | | | | 43 | |
| 48 | 1 | | 14 | | | | | | | | | | | | | | | | | |
| 49 | 1 | | | | | | | | | | | | | | | | | | | 41 |
| 50 | 1 | 12 | | | | | 16 | | | | | | | | | | | | | |
| 51 | 1 | | | 13 | | | | | | | | | | | | | | | | |
| 52 | 1 | | | | | | | | | | | | | | | | | | | |
| 53 | 1 | | | | | | | | | | | | | | | | | | | |
| 54 | 1 | 10 | | | 12 | | | 14 | | | 18 | | | 22 | | 26 | | | | |
| 55 | 1 | | | | | | | | 14 | | | | | 21 | | | | | | |
| 56 | 1 | | | | | | | | | | | | | | | | | | | |
| 57 | 1 | | | | | 11 | | | | | | | | | | | | | | |
| 58 | 1 | | | | | | | | | | | 16 | | | | | | | | |
| 59 | 1 | | | | | | | | | | | | | | | | | | | |
| 60 | 1 | | 8 | | 9 | | 10 | | 11 | | | | | | | | | | | |
| 61 | 1 | | | | | | | | | | | | | | | | | | | |
| 62 | 1 | | | | | | | | | | | | 14 | | | | | | | |
| 63 | 1 | | | | | | | 9 | | | | | | | | | | | | 21 |
| 64 | 1 | | | | | | | | | | | | | | | | | | | |
| 65 | 1 | | | | | | | | | | | | | | | 15 | | | | |
| 66 | 1 | | | | | | | | 8 | | | | | 12 | | | | | | |
| 67 | 1 | | | | | | | | | | | | | | | | | | | |
| 68 | 1 | | | | | | | | | | | | | | | | | | | |
| 69 | 1 | | | | | | | | | 7 | | | | | | | | | | |
| 70 | 1 | | | | | | | 6 | | | | | | | | | | | | 14 |
| 71 | 1 | | | | | | | | | | | | | | | | | | | |
| 72 | 1 | | 4 | | | | 5 | | | | | | | | | | | | | |
| 73 | 1 | | | | | | | | | | | | | | | | | | | |
| 74 | 1 | | | | | | | | | | | | | | 8 | | | | | |
| 75 | 1 | 3 | | | | | 4 | | | | | | | | | | | | | |

Gültig für Übersetzungsverhältnis 90:1

| Teilung | Umdrehungen | Lochkreis | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 27 | 29 | 31 | 33 | 37 | 39 | 41 | 43 | 47 | 49 |
| 76 | 1 | | | | | | | | | | | | | | | | | | | |
| 77 | 1 | | | | | | | | | | | | | | | | | | | |
| 78 | 1 | | | | | | | | | | | | | | | 6 | | | | |
| 79 | 1 | | | | | | | | | | | | | | | | | | | |
| 80 | 1 | | 2 | | | | | | | | | | | | | | | | | |
| 81 | 1 | | | | 2 | | | | | | 3 | | | | | | | | | |
| 82 | 1 | | | | | | | | | | | | | | | | 4 | | | |
| 83 | 1 | | | | | | | | | | | | | | | | | | | |
| 84 | 1 | | | | | | | | | | | | | | | | | | | |
| 85 | 1 | | | 1 | | | | | | | | | | | | | | | | |
| 86 | 1 | | | | | | | | | | | | | | | | | 2 | | |
| 87 | 1 | | | | | | | | | | | 1 | | | | | | | | |
| 88 | 1 | | | | | | | | | | | | | | | | | | | |
| 89 | 1 | | | | | | | | | | | | | | | | | | | |
| 90 | 1 | | | | | | | | | | | | | | | | | | | |
| 93 | 0 | | | | | | | | | | | | 30 | | | | | | | |
| 94 | 0 | | | | | | | | | | | | | | | | | | 45 | |
| 95 | 0 | | | | | 18 | | | | | | | | | | | | | | |
| 96 | 0 | | 15 | | | | | | | | | | | | | | | | | |
| 98 | 0 | | | | | | | | | | | | | | | | | | | 45 |
| 99 | 0 | | | | | | | | 20 | | | | | 30 | | | | | | |
| 100 | 0 | | | | | | 18 | | | | | | | | | | | | | |
| 102 | 0 | | | 15 | | | | | | | | | | | | | | | | |
| 105 | 0 | | | | | | | 18 | | | | | | | | | | | | 42 |
| 108 | 0 | | | | 15 | | | | | | | | | | | | | | | |
| 110 | 0 | | | | | | | | 18 | | | | | 27 | | | | | | |
| 111 | 0 | | | | | | | | | | | | | | 30 | | | | | |
| 114 | 0 | | | | | 15 | | | | | | | | | | | | | | |
| 115 | 0 | | | | | | | | | 18 | | | | | | | | | | |
| 117 | 0 | | | | | | | | | | | | | | | 30 | | | | |
| 119 | 0 | | | | | | | | | | | | | | | | | | | |
| 120 | 0 | | 12 | | | | 15 | | | | | | | | | | | | | |
| 123 | 0 | | | | | | | | | | | | | | | | 30 | | | |
| 126 | 0 | | | | | | | 15 | | | | | | | | | | | | 35 |
| 129 | 0 | | | | | | | | | | | | | | | | | 30 | | |
| 130 | 0 | | | | | | | | | | | | | | | 27 | | | | |
| 132 | 0 | | | | | | | | 15 | | | | | | | | | | | |
| 135 | 0 | 10 | | | 12 | | | 14 | | | 18 | | | 22 | | 26 | | | | |
| 138 | 0 | | | | | | | | | 15 | | | | | | | | | | |
| 141 | 0 | | | | | | | | | | | | | | | | | | 30 | |

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| Teilung | Umdrehungen | Lochkreis | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 27 | 29 | 31 | 33 | 37 | 39 | 41 | 43 | 47 | 49 |
| 144 | 0 | | 10 | | | | | | | | | | | | | | | | | |
| 145 | 0 | | | | | | | | | | | 18 | | | | | | | | |
| 147 | 0 | | | | | | | | | | | | | | | | | | | 30 |
| 149 | 0 | | | | | | | | | | | | | | | | | | | |
| 150 | 0 | 9 | | | | | 12 | | | | | | | | | | | | | |
| 152 | 0 | | | | | | | | | | | | | | | | | | | |
| 153 | 0 | | | 10 | | | | | | | | | | | | | | | | |
| 155 | 0 | | | | | | | | | | | | 18 | | | | | | | |
| 160 | 0 | | 9 | | | | | | | | | | | | | | | | | |
| 161 | 0 | | | | | | | | | | | | | | | | | | | |
| 162 | 0 | | | | 10 | | | | | | 15 | | | | | | | | | |
| 163 | 0 | | | | | | | | | | | | | | | | | | | |
| 165 | 0 | | | | | | | | 12 | | | | | 18 | | | | | | |
| 170 | 0 | | | 9 | | | | | | | | | | | | | | | | |
| 171 | 0 | | | | | 10 | | | | | | | | | | | | | | |
| 174 | 0 | | | | | | | | | | | 15 | | | | | | | | |
| 175 | 0 | | | | | | | | | | | | | | | | | | | |
| 180 | 0 | | 8 | | 9 | | 10 | | 11 | | | | | | | | | | | |
| 181 | 0 | | | | | | | | | | | | | | | | | | | |
| 182 | 0 | | | | | | | | | | | | | | | | | | | |
| 183 | 0 | | | | | | | | | | | | | | | | | | | |
| 185 | 0 | | | | | | | | | | | | | | 18 | | | | | |
| 186 | 0 | | | | | | | | | | | | 15 | | | | | | | |
| 189 | 0 | | | | | | | 10 | | | | | | | | | | | | |
| 190 | 0 | | | | | 9 | | | | | | | | | | | | | | |
| 195 | 0 | | | | | | | | | | | | | | | 18 | | | | |
| 198 | 0 | | | | | | | | 10 | | | | | 15 | | | | | | |
| 199 | 0 | | | | | | | | | | | | | | | | | | | |
| 200 | 0 | | | | | | 9 | | | | | | | | | | | | | |
| 205 | 0 | | | | | | | | | | | | | | | | 18 | | | |
| 207 | 0 | | | | | | | | | 10 | | | | | | | | | | |
| 210 | 0 | | | | | | | 9 | | | | | | | | | | | | 21 |
| 215 | 0 | | | | | | | | | | | | | | | | | 18 | | |
| 220 | 0 | | | | | | | | 9 | | | | | | | | | | | |
| 222 | 0 | | | | | | | | | | | | | | 15 | | | | | |
| 225 | 0 | 6 | | | | | 8 | | | | | | | | | | | | | |
| 230 | 0 | | | | | | | | | 9 | | | | | | | | | | |
| 234 | 0 | | | | | | | | | | | | | | | 15 | | | | |
| 235 | 0 | | | | | | | | | | | | | | | | | | 18 | |
| 240 | 0 | | 6 | | | | | | | | | | | | | | | | | |

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| Teilung | Umdrehungen | Lochkreis | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 27 | 29 | 31 | 33 | 37 | 39 | 41 | 43 | 47 | 49 |
| **243** | 0 | | | | | | | | | | 10 | | | | | | | | | |
| **245** | 0 | | | | | | | | | | | | | | | | | | | 18 |
| **246** | 0 | | | | | | | | | | | | | | | | 15 | | | |
| **255** | 0 | | | 6 | | | | | | | | | | | | | | | | |
| **258** | 0 | | | | | | | | | | | | | | | | | 15 | | |
| **261** | 0 | | | | | | | | | | | 10 | | | | | | | | |
| **270** | 0 | 5 | | | 6 | | | 7 | | | 9 | | | 11 | | 13 | | | | |
| **279** | 0 | | | | | | | | | | | | 10 | | | | | | | |
| **282** | 0 | | | | | | | | | | | | | | | | | | 15 | |